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ABSTRACT

A large, private western university, committed to developing technology-proficient educators, brought professors and public school teachers together in three professional development seminars on integrating technology into the K-12 curriculum. This paper summarizes a panel discussion by four participants in the workshops: a district director of information systems; a state Internet specialist; a public school teacher involved with the state education network; and a university faculty member. Issues related to integrating technology into curriculum and instruction as they pertain to both preservice and inservice development are discussed. (MES)

Technology Integration within University/Public School Communities

A Panel Discussion

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Abstract: Preparing tomorrow's teachers to use technology in schools is a complex endeavor requiring the infusion of technology into curriculum and instructional practices at all levels of preservice and inservice programs. A large, private western university is committed to developing technology-proficient educators including university faculty, public school teachers, and preservice teachers. This university brought professors and public school teachers together in three professional development seminars on integrating technology into the K-12 curriculum. The State Office of Education and the professional development team for technology application from the university provided instructional support for these seminars.

The Panel

This panel consisted of four participants in the workshop: 1) a District Director of Information Systems, Cindy Nagasawa-Cruz, 2) a State Internet Specialist, Rick Gaisford, 3) a public school teacher involved with the State Education Network, Steven Haderlie, and 4) a university faculty member, Nancy Wentworth. They discussed the issues of integrating technology into curriculum and instruction as they pertain to both preservice and inservice development. They described topics included in the seminars, provide sample projects produced during the seminars, and interact with the audience about issues of integrating technology into preservice and inservice programs. The following is a short summary of their participation in the workshop.

Nancy Wentworth

Background

The teacher education program at this university was seen to provide modern technologies to every student, and connect several classrooms to one another and to the outside world. However, the program needed to increase the use of high quality learning resources integrated into the curriculum, and increase the support of teachers (both university faculty and public school cooperating teachers) as they use technology to improve teaching and learning.

The preservice program include university methods and certification courses and field experiences for preservice teachers, along with technology support for university faculty and students. The teacher education program includes only one technology course, the lowest technology requirement of any teacher education program in state. The course was designed to help students develop skills in using a variety of educational technologies; however it was not concerned with integrating the use of technology into curriculum and instruction in the classroom. Focus group data have demonstrated that graduates from the teacher education program have technology skills for personal use but not for classroom integration. In a few isolated methods courses the use of technology in curriculum and instructional practice is modeled, but this modeling does not always align with curriculum from the public schools. In a limited number of field experiences public school teachers provide examples of lesson plans and assignments that engage pupils with technology, but these experiences were not available to all preservice teachers. Few active technology users work to support colleagues who are beginning to use technology in their classrooms.

All participants in the preservice program needed to learn to integrate technology into their curriculum and instructional practices. University professors needed to develop expertise in using technology in their instructional practice and in aligning their activities with curriculum and technology used in public schools. Public school

teachers need to make university professors aware of the availability of technology in public schools and of ways that it can be integrated into instruction. These participants needed to model these instructional practices to preservice teachers and to encourage them to implement technology during their preservice practica. All participants needed to become critical, knowledgeable consumers and decision makers concerning use of technology in education and to be capable of acting as change agents supporting the use of technology in teaching and learning.

The Seminars

Participants were introduced to basic methods of using a variety of technologies in the classroom and creating curriculum materials, which could be used in classrooms. University faculty teamed with master teachers from the partnership districts to acquire technology development skills and to create a curriculum project which used technology to extend instructor and student capabilities for learning and thinking using higher order processes and skills. During the week several master teachers demonstrated and modeled learning activities which used technology, but the majority of the week was spent with hands on learning and curriculum project development.

Infrastructure

All participants in the preservice program are linked in an infrastructure that encourages them to share ideas and resources. The University-Public School Partnership has connected the University and five nearby school districts as a legally contracted partnership of educators for more than 15 years. During this time participants in the Partnership have come to understand and respect each other's perspectives. All members have worked collaboratively in creating and implementing the university's elementary and secondary teacher education programs. They have also collaborated with the State Office of Education and the State Education Network

Through the Partnership some participants have collaborated concerning uses of technology in education, but they are only beginning to focus specifically on the preservice program. Interested university and public school personnel discussed program changes that will infuse technology throughout the teaching and learning experience of all participants, and they began to identify participants at all levels who incorporate technology into the learning process. Beginning in the summer of 1999 public school teachers who have integrated technology use into their curriculum and instruction will begin a collaboration which will last throughout the year with university professors who teach content-specific methods courses and teacher certification courses to preservice teachers. Discussions will continue to occur in Partnership activities to develop a shared vision about the use of technology in curriculum and instruction.

Steven Haderlie

Data Acquisition from Focus Groups

Two meetings were held in the spring of 1999 for the purpose of determining need and direction for the integration of technology into the Teacher Education department at Brigham Young University. The first meeting involved the five district information system directors of the BYU Public School Partnership school districts. Several enlightening observations were made of the newly hired teachers who had graduated from the McKay School of Education and their experiences with technology integration while at the university:

1. New teachers had considerable expertise in technology for personal use, (i.e.) email and web browsing. They had almost no experience in how to use the technology in the curriculum. They understood the mechanics of using technology well but the implementation was extremely weak.

2. University instruction focused on the mechanics of technology use with little instruction on the integration of technology into the classroom curriculum.

3. The small amount of instruction on technology integration was limited to a one or two technology course.

4. University faculty rarely made assignments that would enhance skills developed in the technology course. University faculty did not model behaviors that would demonstrate to students technology integration into curriculum.

The second meeting brought together nearly fifty teachers selected by the district information directors as teachers who were among the best in the five partnership districts in technology integration. This group outlined criteria for a summer workshop and formulated design principles. It was determined that those invited to attend should have basic computer skills but not be computer experts. Priority should be given to exceptional classroom teachers who already possess excellent teaching skills. Attendees should be teachers who are risk-takers and early adopters. Teachers who are invited to attend these sessions will become "fire-starters" when they return to their schools and excite others to learn the skills needed for effective use of technology in the curriculum. Skills to be mastered included digital cameras, scanning, acquisition of materials from the Internet and the creation of a unit of instruction using Microsoft PowerPoint to allow for participants to obtain and retain ownership of the concepts and principles.

Teachers in this design meeting frequently mentioned that in their experience with attendance at workshops, the learned skills do not follow them back to the classroom. Two reasons were given for this: 1) their classroom does not have the needed hardware and/or software; and 2) after the experience in the workshop has concluded, they are left on their own to try to find answers to all the questions and problems that they encounter. The design group suggested that follow-up sessions be planned as part of the summer workshop so that the participants could meet three times during the following school year for additional training and to answer questions and solve problems. It was also recommended that an email discussion list be created to allow for questions to be posted and answers provided by instructors and participants.

Additionally, during the past two years in working with McKay School of Education faculty it was observed that the faculty was hesitant to attend instruction intended to teach them technology integration skills. It was observed that the structure of university faculty advancement was a detriment to technology integration. Faculty was hesitant to allow peers to observe their lack of knowledge of technology, especially when they were in competition for tenure track positions. This environment did not encourage collaboration and the attitudes continued even after tenure was achieved. Most importantly, faculty was hesitant to participate in inservice activities when the instructor was younger and less academically qualified than himself or herself. For the most part, technology has advanced so rapidly and has such a short history most university faculty have not had the opportunity to be part of the information revolution. The technology experts are often their own students and traditional teaching styles which require that the instructor always know more than the student inhibits use of student expertise to infuse technology into learning environments.

Observations during Inservice Activities

The university faculty was grouped with three master teachers during inservice activities during the week. The faculty was instructed to provide expertise in the content area. It was observed that the public school teachers quickly assimilated the technology skills and immediately began work on their group project. The university faculty was less inclined to begin working but the enthusiasm and initiative of the public school teachers soon involved them in the creation of the group instructional unit. As the week proceeded, it became clear that the secret to involving university teacher education faculty in meaningful technology inservice activities was to group them with master public school teachers. Several outcomes were observed:

1. Public school teachers were not intimidated by peers and collaborated more effectively than university faculty.
2. University faculty adapted to the public school teachers' attitudes about collaboration and became an effective member of the group both offering information and asking for help in solving encountered problems.
3. University faculty seemed to thrive in this new collaborative environment and finished the week with a new enthusiasm and confidence that they had acquired the skills necessary to begin technology implementation in their own instructional strategies. Additionally, they were now unafraid to ask questions of the public school teachers when they encountered problems with technology issues.
4. University faculty were able to observe that many public school teachers have already acquired the skills and equipment needed to infuse technology into learning and that as cooperating teachers to pre-service student teachers they can model many of the technology infusion skills which university faculty have yet to develop.
5. University faculty who attended the summer workshops was more open to technology inservice activities during the following semester and began to request equipment and physical facilities that would expedite their integration of technology into their instructional activities.

Rick Gaisford

It has been difficult for schools and districts to effectively train teachers currently in the education system with knowledge and skills on how to use technology in the classroom, let alone train new teachers coming into the system. The Curriculum Using Technology Workshop, sponsored by the BYU/Utah Public Schools Partnership has tried to address this problem. The project began with two "simple" goals. One, train classroom teachers to more effectively use technology resources in the classroom to enhance teaching and student learning. Two, train university faculty to use technology with pre-service teachers and encourage them to have these same pre-service teachers use it in their university coursework, methods courses, and student teaching. When these teacher candidates graduate from the university they will leave better prepared to teach curriculum standards and they will know how to use technology effectively in teaching and learning. This will allow schools and districts to focus their training on teachers in the system drawing on the skills of these new teachers.

This past summer the BYU/Utah Public Schools Partnership sponsored two week-long technology integration workshops. One week was devoted to elementary teachers, the other to secondary teachers. Members of the BYU faculty were invited to participate during either week. Because this was a pilot project the numbers were kept intentionally small. Each week approximately twenty-five classroom teachers from partner districts

participated. In addition five to seven BYU faculty participated each week. The underlying premise for all participants was to think about the curriculum they are responsible to teach and to select a topic that could be enhanced with technology resources and tools.

The first day of the workshop focused on the question of why use technology in education, and what technological tools and resources are available to teachers. This first day was designed to build a common foundation of knowledge for the participants to draw on during the week. Rick Gaisford, Internet Specialist for the Utah State Office of Education, presented about the various technology tools and resources available to teachers. He highlighted tools from video to the Internet to multi-media authoring programs that teachers and students can use in teaching and learning. He emphasized the point that the students in the system today must be able to problem-solve, learn and work in new, complex and technology rich environments. Dr. Laurie Nelson, Professor of Instructional Psychology and Technology, shared some of the latest research about the effectiveness of technology in teaching and learning. Through a series of activities participants noted both the positive and negative aspects of integrating technology into the curriculum. Interestingly, the positive effects revolved around the benefits for students, while the negative aspects centered on the difficulty in having adequate tools and training for teachers.

During the afternoon of the first day Dianne Smith, technology trainer for Davis School District, presented a unit of study, which aptly demonstrated the power technology can have in teaching and learning. The students, BYU faculty and classroom teachers, were guided through a unit of study based on the musical composition The Mouldau, by Bedrich Smetana. Through the use of the Internet, and multimedia authoring software, the students learned the history, geography and culture of Czechoslovakia. In addition, they learned about thematic poems in music, musical themes, and the life the composer. The use of technology enabled the teacher to present her information in a multi-sensory way that both engaged and inspired the participants. At the end of her presentation, the workshop participants were gently reminded they were to create a similar type of project but not on such a grand scale, since they would only have a week to develop it.

The second day of the workshop introduced teachers to the technology tools and skills they would need to accomplish their own project. Mini-workshops were held that focused on: 1) How to use a scanner and digital camera, 2) Internet resources for educators, and 3) copyright issues in education. During the afternoon the participants were instructed on how to use PowerPoint by Microsoft to create a multimedia presentation. Time was also given to district technology specialists to share strategies on how to create a good project using technology.

Days three and four were devoted to project development with support from workshop staff and district curriculum specialists. During this time teachers worked independently or in groups to develop a curriculum project using technology resources and tools. Many of the BYU Faculty partnered with classroom teachers in the development of projects with each side sharing their expertise, insight and skills. During these two days of project development four master teachers were invited to share a project they have done in their classrooms. These one-hour presentations shared skills and tips on how to effectively use technology in teaching and learning.

The final morning of the project let the participants finish up their multimedia presentations. The highlight of the day and week was when each group or individual shared their curriculum ideas and presentation. There was a real sense of accomplishment as the participants realized how much they had learned in just few days. To view the schedule of the week's events and to see the projects that were created visit the following website: http://msed.byu.edu/cites/curriculumUsingTechnology/index

The evaluation of this project by the participants clearly demonstrated its effectiveness in meeting the project goals. The evaluations without exception stated the time spent during the week had been valuable and useful. They stated that they had learned skills and resources they would take back and use in their classrooms. Many of the BYU Faculty came away with a new vision of the power and usefulness of technology in education. They noted how important it is for them to make sure the pre-service teachers know and use technology resources both in their coursework and practicum experiences. The workshop staff noted the depth and complexity of the curriculum projects created by the teachers and faculty compared with other workshops they had participated in. Several reasons were cited: 1) setting a good foundation on the first day, 2) having the teachers focus on their curriculum, 3) time to learn and experiment – 5 days, 4) small teacher/pupil ratio, 5) hands-on learning, 6) project- based, each teacher had to create or help in the creation of a final project. The project staff noted that the vision the participants had of technology in this workshop differed from their experiences in other similar types of workshops. Here the participants left with the attitude of I will vs. I might. They had a sense of being that I can vs. I may.

The work with the BYU Faculty and district teacher participants is not over. Several opportunities for follow-up and skill building have been scheduled during the school year. The first follow-up session was held in November where additional skills and technology integration strategies were shared. An e-mail listserv has been established to better facilitate communication and inform participants of new learning opportunities. Additional help is only a phone call away for the project participants. BYU has two classroom teachers on staff to help the faculty learn new resources, skills and tools. Each of the districts has trainers that will follow-up with the teacher participants.

This has been a pilot year for this project. The experience had during the two one-week workshops demonstrated the usefulness and effectiveness of this project. This model will continue to be evaluated and improved. The planning for a year two series of workshops is under way. It is the feeling of the project staff that the goals of this project were met and in many individual cases surpassed.

Cindy Nagasawa-Cruz

Jordan School District is a K-12 public school district located in the southern section of the Salt Lake Valley in the state of Utah. The district is the largest in the state with a student population of approximately 73,000 students, 3,502 full time equivalent certificated staff and 3,161 full time equivalent classified support staff. The district operates 25 traditional calendar elementary schools, 28 year round calendar elementary schools, 15 middle schools, 10 high schools and 3 special schools within a 250 square mile radius. As one of the fastest growing districts in the state, Jordan School District has experienced dramatic growth from the early 1960's to the present.

The Jordan School District Instructional Technology Strategic Plan is in its fifth year of implementation and is currently undergoing a major revision. The plan is structured using a traditional strategic planning model containing beliefs, parameters, a clearly defined and measurable mission statement, objectives, strategies and action plans. This provides the framework and direction for setting annual priorities for district instructional technology programs. Specific projects are identified and implemented in order to obtain the critical mass necessary to make an impact using technology in instruction. Each instructional technology project is designed with a corresponding staff development plan.

In its initial years, the district plan focused on network infrastructure, world wide web connectivity, hardware and software acquisition for students and teachers, and basic technology skills in its staff development programs. In more recent years the focus has shifted to how the technology can become a common tool to support regular, everyday instructional practices. While there still exists some need to provide inservice for basic technology skills and personal productivity, current efforts are focused on moving teachers to the next phase of using technology; that is to use technology as an effective tool in teaching and learning.

Moving to this next phase of technology use in the classroom is a major change for teachers, particularly in comparison to the "traditional" model of teaching experienced in most preservice or inservice programs. Using technology effectively in the teaching and learning process requires a shift in paradigm. This shift in paradigm is described as "technology integration" into the curriculum. The classroom environment begins to take on a more constructivist atmosphere. It becomes increasingly student-centered, inquiry based, and project oriented. Students begin to play a more active role in information gathering, analysis, problem solving, creation and presentation. Additionally, effective use of the technology can support diverse learners, student learning centers, and cooperative student workgroups.

To communicate the vision of integrating technology into existing curriculum and instructional practice, the district has been establishing "demonstration classrooms" where the effective use of technology is being modeled in live teaching environments. Individuals from preservice and inservice programs are encouraged to attend these classrooms to gain the insight and vision of technology integration. Additionally, the district uses three curriculum technology integration specialists (one at each elementary, middle and high school), whose main focus is

to review existing curriculum and develop methodologies to use technology as a supporting tool for teachers and students.

Promoting this vision of technology integration has became a common need for preservice programs at Brigham Young University (BYU) and inservice programs at Jordan School District. In a district the size of Jordan School District, the process of making a systemic change across the board for thousands of teachers in the effective use of technology in instruction is a monumental task. The existing BYU Partnership structure was a natural fit for supporting this effort. When offered the opportunity to attend a five day technology integration summer workshop with university faculty, more teachers applied then were seats available. Teachers were provided a paid stipend upon completion of five days attendance and creation of a multimedia/technology-based instructional project. The district teachers who attended include: nine 5th grade teachers representing one year round elementary school and three traditional elementary schools; and nine secondary social studies teachers from three middle schools and one high school. The district also provided the service of the three curriculum technology integration specialists as well as one distance learning coordinator to assist with the activities throughout the five day workshop.

Response from the summer workshop and follow-up sessions has been notably positive. Some teachers who viewed themselves as already "technology savvy' expressed excitement that they learned many new skills and ideas about using technology resources in their classrooms. Others have stated their newfound discovery and use of the technology resources allow them to teach with more "breadth and depth" of existing subject areas. Teachers are realizing that when students use the technology to create and present, the students work harder towards a more complete and finished product. The workshop has also encouraged communication and collaboration among teacher teams from all participating schools. The finished multimedia products and the ability to share them with each other have proven to be a valuable teacher resource long after the initial summer experience; as is the continuing additions and updates to the workshop web site.

The cooperative effort between university faculty, public school teachers and preservice teachers will continue to foster valuable future developments in the area of technology integration. School districts must be positioned to offer high quality instruction that is effectively supported by the use of technology as a tool for teaching and learning. Today's students have come to expect technology use as a natural part of their everyday lives.

More information about Jordan School District can be found at: www.jordan.k12.ut.us.

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